Description for Lab Week 6 Part 1

Objective:

To determine the time elapsed between first pressing switch S1 and then pressing switch S2 using the 32 bit timer

Method:

Set the frequency of the 32 bit timer to an appropriate value. Remember that the clock for Timer32 must be derived from MCLK only and the allowable dividers are 1/16/256 only. However MCLK can be derived from various primary clocks (Refer to TRM page 380). In the main.c set up Timer32 and start it using Listing 7.8 on page 131 of the text as a guide. Also set up GPIO interrupts for PORT1. After all initialization, let the main wait in a loop for a FLAG to be set

In the interrupt handler for S1 use the Timer32_getValue function (page 325 of Driver Library User Guide) to note the reading of the Timer32 counter when S1 was pressed – Save it as count1

In the interrupt handler for S2 save the value of the reading of the Timer32 counter when S2 was pressed – Save it as count2. Then set the FLAG

Now the main will come out of the waiting loop. Disable GPIO PORT1 interrupt. Then calculate the elapsed interval as (assuming no overflows of Timer32)

$$T = (count1-count2)/ f_{CLK}$$ where f_{CLK} is the frequency of the clock applied to Timer32

Display it either using writefloat function in UART or in the expressions window in debug mode

Get the project checked off and submit following normal procedure